

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Authorizing Permissive Use of the “Next)	GN Docket No. 16-142
Generation” Broadcast Television Standard)	
)	

COMMENTS OF T-MOBILE USA, INC.

T-Mobile USA, Inc. (“T-Mobile”)^{1/} hereby submits these comments in the above referenced proceeding in which the Commission proposes rules governing the deployment of television broadcasting using the next generation transmission standard developed by the Advanced Television System Commission (“ATSC 3.0”).^{2/} T-Mobile is generally supportive of efforts of the broadcast industry and the Commission designed to advance technology and deliver new and innovative services to consumers. However, implementation of ATSC 3.0 technology should not negatively affect the post-incentive auction repacking process. Further, participation in the deployment should, as the Commission and industry contemplates, be fully voluntary for all market participants, including equipment manufacturers.

I. INTRODUCTION AND BACKGROUND

T-Mobile, including the MetroPCS brand, offers nationwide wireless voice, text, and data services to over 72 million subscribers.^{3/} In the first quarter of 2017, T-Mobile added 1.1 million net customers – marking the 4th consecutive year in which the company has generated more than

^{1/} T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

^{2/} *In the Matter of Authorizing Permissive Use of the “Next Generation” Broadcast Television Standard*, Notice of Proposed Rulemaking, GN Docket No. 16-142 (rel. Feb. 24, 2017) (“NPRM”).

^{3/} See T-Mobile News Release, *T-Mobile Celebrates 4 Years as a Public Company with Industry Leading Customer & Financial Growth and Game-Changing Spectrum Auction Results*, (April 24, 2017), <https://newsroom.t-mobile.com/news-and-blogs/q1-2017-earnings.htm>.

one million net customer additions in every quarter.^{4/} T-Mobile also saw continued growth in both branded prepaid and postpaid phone customers.^{5/} Within the space of three years, the footprint for T-Mobile’s 4G Long Term Evolution (“LTE”) network – the nation’s fastest growing 4G LTE network – has gone from covering zero to covering approximately 314 million Americans, and T-Mobile expects to bring that number to 321 million by the end of 2017.^{6/} T-Mobile has deployed Wideband LTE to 231 million people, and is expanding Extended Range LTE to enhance coverage and in-building performance.^{7/} All of the above investments benefit T-Mobile consumers, allowing them to stream three times more music, watch two times more video, and use 50% more data than any other carrier’s customers.^{8/}

T-Mobile plans to continue these investments and network improvements by deploying advanced LTE services using the 600 MHz spectrum for which it was the high bidder during the recently closed Broadcast Incentive Auction.^{9/} T-Mobile won rights to 600 MHz spectrum covering all of the United States and Puerto Rico, 31 megahertz nationwide on average, for which it will pay the United States Treasury nearly \$8 billion.^{10/} Because of its propagation characteristics, this spectrum is particularly valuable to wireless carriers like T-Mobile who seek

^{4/} See *id.*

^{5/} See *id.*

^{6/} See *id.*

^{7/} See *id.*

^{8/} See T-Mobile News Release, *Hello Un-carrier 12 ... R.I.P. Data Plans T-Mobile Goes All In on Unlimited* (Aug. 18, 2016), <https://newsroom.t-mobile.com/news-and-blogs/rip-data-plans.htm>.

^{9/} Public Notice, *Incentive Auction Closing and Channel Reassignment Public Notice*, FCC, DA 17-314 (rel. April 13, 2017) (“Auction PN”).

^{10/} Press Release, *T-Mobile’s Spectrum Haul is a Game Changer for Wireless Consumers* (Apr. 13, 2017), <https://newsroom.t-mobile.com/news-and-blogs/tmobile-spectrum-auction-win.htm> (“Auction Press Release”).

to improve their coverage indoors and in rural areas.^{11/} T-Mobile plans to begin deploying this spectrum, which will allow it to more effectively compete in markets long dominated by just one or two wireless providers and bring LTE coverage to millions of rural Americans, *this year*.^{12/} T-Mobile will utilize its 600 MHz spectrum not just for 4G coverage, but also for its 5G network, which it will begin to roll-out in 2019 and provide nationwide service sometime in 2020.^{13/}

On April 13, 2016, groups representing the broadcast industry filed a petition for rulemaking asking the Commission to permit the voluntary transition of TV broadcast stations from the current digital TV format (ATSC 1.0) to ATSC 3.0.^{14/} Responsive to the Joint Petition, the Commission now proposes rules which would allow such a transition on a voluntary basis. The proposed rules would not require any broadcaster, equipment manufacturer, or consumer to participate in the transition, allowing all to continue utilizing ATSC 1.0 signals, which must continue to be broadcast through a system of simulcast agreements with other market stations.

T-Mobile will be a significant holder of licenses in the 600 MHz band. It has been working, and will continue to work, with broadcasters to help ensure a smooth transition for those stations required to relocate to new channel assignments. While ATSC 3.0 represents an exciting opportunity for broadcasters and television viewers, the Commission should carefully craft its rules governing ATSC 3.0 deployment to ensure that the Commission's announced repacking schedule is unaffected and that the ATSC 3.0 transition remains voluntary, including

^{11/} *Id.*

^{12/} *Id.*

^{13/} T-Mobile News Release, *T-Mobile Announces Plans for Real Nationwide Mobile 5G*, (May 2, 2017), <https://newsroom.t-mobile.com/news-and-blogs/nationwide-5g.htm>.

^{14/} Joint Petition for Rulemaking of America's Public Television Stations, the AWARN Alliance, the Consumer Technology Association, and the National Association of Broadcasters, GN Docket No. 16-142 (filed Apr. 13, 2016) ("Joint Petition").

with respect to receivers. As T-Mobile recently emphasized, the repacking process is an important component of ensuring that consumers realize the benefits of faster wireless broadband, economic growth, and job creation that networks built on repacked spectrum will deliver.^{15/}

II. ATSC 3.0 DEPLOYMENT SHOULD NOT AFFECT THE CURRENT REPACKING TIMELINE

T-Mobile appreciates and agrees with the Commission’s assertion that any ATSC 3.0 deployment must not “negatively affect the post-incentive auction transition process.”^{16/} It is important that the Commission continue to adhere to the current final repacking deadline of July 13, 2020.^{17/} While there may be significant public interest benefits that will result from ATSC 3.0 deployment, the Commission should also consider the importance of introducing wireless services in the 600 MHz band.

The growing demand for wireless capacity is well documented. According to estimates from Cisco, in 2016 alone, mobile data traffic grew by over 40% in the US, with a further 5-fold increase coming between 2016 and 2021.^{18/} Ericsson reached the same conclusion, predicting that data usage in North America will go from 5.1 GB/month to 25 GB/month between 2016 and 2022.^{19/} This growth cannot be supported without an infusion of new spectrum, which is exactly

^{15/} See, Comments of T-Mobile USA, Inc., GN Docket No. 12-268 (April 26, 2017) (“Recon Petition Comments”).

^{16/} *NPRM* at ¶ 77.

^{17/} *Auction PN* at ¶ 68.

^{18/} See, Cisco Visual Networking Index tool for the United States, available at http://www.cisco.com/c/dam/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country.

^{19/} See, e.g., Ericsson Mobility Report, Nov. 2016, available at <https://www.ericsson.com/assets/local/mobility-report/documents/2016/ericsson-mobility-report-november-2016.pdf>.

what the incentive auction was designed to deliver, and any delay in the availability of that spectrum will be harmful to carriers' ability to meet well-documented demands.

Further, introduction of wireless services is a critical economic driver. Economists estimate that the “consumer surplus,” the value of wireless services to *consumers* above and beyond what they pay, is over \$640 billion per year.^{20/} CTIA has estimated that the last 20 MHz of new spectrum made available for wireless use created 1.6 million jobs and \$24 billion in GDP growth.^{21/} It conservatively estimates that the 10 year average impact of an additional 10 MHz of spectrum is a GDP increase of \$3 billion and the addition of over 100,000 new jobs.^{22/} The incentive auction repurposed not 10 but 70 MHz of spectrum for wireless use.^{23/}

All of these benefits will be magnified when the 600 MHz spectrum is introduced in two key critical market segments – underserved urban and rural areas. The propagation characteristics of 600 MHz spectrum make it particularly attractive as a coverage layer in urban locations, where building penetration can be challenging. The quicker that T-Mobile and others can access this spectrum in urban locations, the quicker that underserved populations in those areas – who are more likely to rely on wireless providers to access critical Internet services – can access wireless services. The spectrum subject to the incentive auction is also particularly useful in covering rural Americans because 600 MHz signals propagate further than transmissions from higher spectrum bands. That means that providers can reach more customers with less infrastructure, making the spectrum an attractive method by which to provide service in rural

^{20/} See, CTIA, *The Wireless Industry: Revisiting Spectrum, the Essential Engine of US Economic Growth*, April 2016, at 34, available at <http://www.ctia.org/docs/default-source/default-document-library/entner-revisiting-spectrum-final.pdf> (“CTIA Spectrum Report”).

^{21/} *CTIA Spectrum Report* at 30.

^{22/} *Id.*

^{23/} *Auction PN* at ¶ 15.

locations. As it stands, despite the urgent need for these new networks, this spectrum will not be fully available to consumers for more than 3 years while the repacking process occurs.

These benefits should not be delayed to accommodate introduction of ATSC 3.0 capabilities, especially because there is no set timeline for its full implementation.^{24/} The Commission has already started the clock on the repacking process. Deadlines have been set, and planning has already been set into motion, both for broadcasters and wireless providers. By July 12, 2017, broadcast licensees are required to provide an estimate of their costs associated with the repacking to the Commission for reimbursement calculations.^{25/} Any substantive changes to the repacking rules for ATSC 3.0 implementation would impact the repacking schedule, which has already been planned down to the station level.^{26/} In order to ensure that repacking remains on schedule and the benefits of wireless deployment are not delayed, the Commission should therefore only grant authority for a broadcaster to implement ATSC 3.0 if it has already satisfied, or is on track to satisfy, its post-incentive auction repacking requirements.^{27/}

Based on the well-developed approach the Commission adopted to ensure that stations are able to meet their deadlines, even small changes could have a profoundly negative impact on the schedule. Companies will have spent over \$19 billion on the incentive auction spectrum;^{28/}

^{24/} There is no set timeline for the ATSC 3.0 deployment and the NPRM does not discuss an end to the transition, instead leaving the final end of ATSC 1.0 broadcasting for a “future proceeding.” *NPRM* at ¶ 27. See also, *NPRM* at ¶ 22, noting that a “station’s potential transition to ATSC 3.0 [could occur] over a period of several years.”

^{25/} *Id.* at ¶ 85.

^{26/} *Id.* at Appendix G.

^{27/} If a broadcaster wishes to implement ATSC 3.0 but is unable to adhere to the required repacking schedule due to circumstances beyond its control, the Commission may consider such a request on a case-by-case basis.

^{28/} *Auction PN* at ¶ 2.

T-Mobile itself will spend nearly \$8 billion.^{29/} Companies like T-Mobile bid on the basis of the Commission's proposed timeline, which was itself based on direction from Congress in the 2012 Spectrum Act and an extensive record in the incentive auction proceeding.^{30/} Changing the timeline now to potentially accommodate ATSC 3.0 implementation would undermine those investment-backed expectations and upset careful planning on the part of companies which have invested billions in network expansions to be built using this spectrum.

III. THE ATSC 3.0 DEPLOYMENT SHOULD BE FULLY VOLUNTARY FOR BROADCASTERS, MANUFACTURERS, AND CONSUMERS

ATSC 3.0 may allow broadcasters to utilize Internet protocol-based distribution, opening the possibility of increased flexibility in broadcasters' use of their allotted spectrum.

Broadcasters intend to use ATSC 3.0 to broadcast in 4K resolution, localize programming, and provide detailed and layered emergency alerts.^{31/} But the ATSC 3.0 standard remains under development and, among other things, there is no equipment commercially available that can utilize ATSC 3.0 in its final form. According to the most recent update on the ATSC website, 9 of the 23 standards making up the complete ATSC 3.0 package have yet to be finalized, with 6 standards considered "Candidate" and one, the "Physical Layer Uplink/Downlink," listed as a "Draft."^{32/}

The Commission's proposed rules are therefore appropriately intended to facilitate voluntary deployment of ATSC 3.0 technology for all participants in the television

^{29/} *Auction Press Release.*

^{30/} *See Recon Petition Comments* at 9-14.

^{31/} *NPRM* at ¶ 1.

^{32/} ATSC, *ATSC 3.0 Standards Update*, April 2017, http://atsc.org/standards/atsc-3-0-standards-update/#.WQu-_2nyuCg.

marketplace.^{33/} No broadcaster will be required to participate in the ATSC 3.0 conversion, whether as a 1.0 simulcast host station or by broadcasting in ATSC 3.0. Similarly, under the proposed rules, no manufacturer will be required to include an ATSC 3.0-compatible tuner in its equipment. Finally, no consumer will be required to purchase new equipment in order to continue receiving their existing television content.

T-Mobile supports this approach. It is not appropriate for the Commission to impose an ATSC 3.0 mandate, particularly for mobile devices. The FCC has rarely mandated the use of any particular mobile wireless technology, finding that equipment mandates risk freezing in place particular technological requirements and hamstringing the growth and development of products as the market demands.^{34/} Only in the case of broadcast television, and only based on Congressional directive, has it mandated the adoption of a particular technical standard in a widely used consumer product.³⁵

Moreover, there remain unresolved technical concerns regarding reception of ATSC 3.0 by mobile devices, including designing antennas to allow ATSC 3.0 reception without

^{33/} *NPRM* at ¶ 2.

^{34/} See, e.g., *In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, Report and Order, 29 FCC Rcd 4610, ¶¶ 104–105 (2014) (declining to impose an LTE interface standard in the AWS-3 spectrum because mandating a particular technology would “hamstring innovation and development and be contrary to the Commission’s policy to preserve technical flexibility and refrain from imposing unnecessary technical standards”); *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd. 3700, ¶ 102 (2013) (stating “the Commission has adopted a general policy of providing licensees with significant flexibility to decide which services to offer and what technologies to deploy on spectrum used for the provision of mobile wireless services”); *In re Amendment of Part 27*, 25 FCC Rcd. 11710, ¶ 28 (2010) (“consistent with the Commission’s long-standing policies of maintaining technical and service neutrality in its rules...we adopt rules that remain technology neutral instead of adopting rules that mandate the use of a particular technology or service”).

³⁵ See, *Review of the Commission's Rules and Policies Affecting the Conversion To Digital Television*, Second Report and Order, 17 FCC Rcd. 15978 at ¶ 24 (2002) (noting that Congress had explicitly given it the authority to require DTV mandates for “apparatus designed to receive television pictures”) (citing to 47 U.S.C. 303(s)).

compromising cellular voice and data access. There is limited space inside many mobile devices, and reception of these signals will require a large antenna. While the traditional approach to UHF reception in some mobile devices is an external antenna, this form-factor may not be embraced in mobile phones. While it is possible that acceptable technical solutions to these issues may eventually be discovered, there is no immediate prospect of “downside free” implementation of ATSC 3.0 on mobile devices, making any mandate of its inclusion impractical and potentially detrimental to providing cost-effective mobile devices in form factors that consumers desire.

If, in the future, consumers want access to ATSC 3.0 signals in wireless devices, the marketplace will likely respond to that need.^{36/} Mandating inclusion of ATSC 3.0 capabilities in wireless devices (especially at the beginning of the technology’s life cycle) would dramatically drive up the cost of those devices and lead to a suboptimal consumer experience. That would create a negative result for the tens of millions of Americans who depend on their mobile devices as their *primary* method of connecting to the Internet and particularly low-income Americans whose mobile device is often their *only* Internet connection. A Pew Research study found that 21% of respondents with a household income of less than \$30,000 reported being “heavily” dependent on their smartphones for everything from healthcare to job searches.^{37/} Moreover, for the first time ever, the majority of Americans now rely entirely on their wireless devices,

^{36/} As Chairman Pai recently noted in the context of a requirement that FM chips be enabled in mobile devices, “I don’t believe the FCC has the power to issue a mandate like that, and more generally I believe it’s best to sort this issue out in the marketplace.” Remarks of FCC Chairman Ajit Pai at the North American Broadcasters Association’s Future of Radio and Audio Symposium, February 16, 2017, https://apps.fcc.gov/edocs_public/attachmatch/DOC-343529A1.pdf.

^{37/} Pew Research Center, *Mobile Fact Sheet*, January 2017, <http://www.pewinternet.org/fact-sheet/mobile/>.

forgoing a landline phone at home.^{38/} It would be contrary to the public interest to increase the cost of Americans' primary communications tool via a government mandate by mandating that mobile devices incorporate ATSC 3.0.

V. CONCLUSION

The ATSC 3.0 standard represents an exciting opportunity to provide benefits to broadcast viewers once it is ready for widespread adoption. But the introduction of this technology should not delay the post-incentive auction repacking process and schedule. The wireless networks that will be built using the spectrum being reallocated will bring jobs, economic growth, and faster wireless broadband Internet access to millions of Americans, including those living in underserved urban and rural areas. The Commission should therefore ensure that its rules are carefully crafted to ensure that the ATSC 3.0 deployment does not affect the introduction of wireless services in the 600 MHz band and is fully voluntary for all market participants.

Respectfully submitted,

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^{38/} National Center of Health Statistics, *Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July-December 2016*, May 4, 2017, <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201705.pdf>.